To: Black, Ned[Black.Ned@epa.gov]; Wagner, Amy[Wagner.Amy@epa.gov]; Husby, Peter[Husby.Peter@epa.gov]
Cc: Stuber, Robyn[Stuber.Robyn@epa.gov]; Allen, HarryL[Allen.HarryL@epa.gov]
From: Denton, Debra
Sent: Tue 5/26/2015 1:07:58 PM
Subject: RE: Refugio Spill water samples on way

Hi all

I concur with the sea urchin fert tests for all samples, since the evaluation of the test endpoints is shorter in time and agree with doing no dilutions at each site (100% vs. control). So, statistical analysis will be the TST for the statistical determination. Good, that 2 water depth samples were collected.

Amy, if you need help in the lab, I could help this Thursday and Friday. Or if really need help tomorrow, I could miss my Delta RMP mtg.
Let me know, and I can come there to assist.

Take care!

PEACE = Purposefully Express Appreciation and Compassion for Everyone
Debra
Disclaimer: This message was written with voice activated software. It may contain errors. Some of them might be interesting. Observe the context and the meaning will, hopefully, be obvious.

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-----Original Message-----
From: Black, Ned
Sent: Monday, May 25, 2015 9:47 PM
To: Wagner, Amy; Husby, Peter
Cc: Denton, Debra; Stuber, Robyn; Allen, HarryL
Subject: Refugio Spill water samples on way

Amy et al.,

The crucial info first: 10 bottles (1 L each) are on their way to you. They will be delivered to Amy at the lab by 8:30 AM on Tuesday by START contractor Tara Fitzgerald. The samples were collected today, 25 May 2015 between 13:00 and 18:00 hrs. Please conduct the sea urchin fertilization test on each sample, without a dilution series on any of them. Please let me know preliminary results as soon as possible so that I can decide on and prepare for possible sampling again to occur on Wednesday. If toxicity is observed in these samples, please be prepared to receive a second round of samples Thursday morning for a second round of urchin bioassays.

The surface oil has largely disappeared, probably because the spill was in fact likely close to the lower end of the release estimates. There is some evidence the oil achieved negative buoyancy fairly quickly and has sunk in the water column. I modified my sampling to include samples collected near the bottom.

There has been a lot of interest in our project to do urchin bioassays and considerable controversy which would be better discussed casually. (Once I explain to agitated parties that I am testing a novel way to track impact from spills, their agitation usually turns to enthusiasm.) Based on my observations today on the lack of remaining surface oil, I suspect my sampling occurred too late in the spill history to detect a strong toxicity signal. However, if toxicity is observed (in early, unvalidated results) I will resample on Wednesday.

I sampled today in four locations and Tara collected samples from a 5th. The sampling was done by boat and each location was between 50 and 200 m offshore of selected points. We rigorously deconned our sampling equipment between each location/depth. At each of these five locations we collected one sample approximately 1 m above the bottom and one sample 1 m below the surface. That makes 10. I am not asking for a dilution series because I suspect that most of the samples will exhibit no toxicity in the 100% test. I'm asking for only the urchin bioassay because I want the results as fast as possible. If this type of analysis is to be useful in guiding oil spill response, the results must be as rapid as possible. I also don't want to waste lab resources if this idea does not work this time.

The samples were collected from a reference location, a location which did see oiling on the nearby shore but which is also an area with many natural oil seeps, and 3 locations within the most heavily oiled areas. Two of those oiled locations are places where divers have seen oil on the bottom. The samples were collected starting with the reference location and then moving progressively closer to the areas with higher oiling. My START contractor associates collected water at each location and depth for a variety of chemical analyses, all of which have a 7 day hold time. I will send to list of schedule chemical analyses tomorrow.

In a future and much larger spill I agree it would make sense to do more bioassays with a larger range of endpoints. For the Refugio Spill it might be hard to recover the costs on a wider scope of work, unless these initial bioassays show high toxicity.

My Coast guard colleagues attempted to measure hydrocarbons directly in the water column at each location using fluorimetry. There were some problems with the device and they were not satisfied with the results until the last two locations, where they did detect oil at low levels. They will deploy again tomorrow by boat to remeasure each location with their fluorimeter.

Long day, good night.

ned

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-----Original Message-----
From: Wagner, Amy
Sent: Monday, May 25, 2015 3:32 PM
To: Denton, Debra; Black, Ned; Stuber, Robyn
Subject: RE: RE: Information on toxicity testing

Hi All,

Since we are NELAP certified for urchin fertilization tox tests and abalone tox tests, it makes sense to do those first. If further testing with longer endpoints need to be done, a contract lab will have to conduct them. I think it would be hard to do water changes every other day with a longer term (fish) test since it

is dissipating daily (samples may not be representative or consistent with time).

I just got back from audits in Hawaii Friday night and am in the lab today getting prepared. We don't have a great deal of abalone in the lab to handle the workload, so I'd like to do urchin fert tests first. I haven't had a chance to do any research, but produced water studies from my thesis era showed that urchin fertilization toxicity tests were more sensitive than mysid and abalone toxicity tests. Produced water is not the same beast as crude oil, but it does contain PAHs. Robyn just sent a paper to the Regional Board (attached) regarding crude and weathered crude, and that also shows the echino fert tox test is usually most sensitive to crude.

I agree with Debra that holding extra sample would be a good idea - I am guessing that our lab is also doing chemistry analyses and we'll have a better picture of the contaminants and probably remaining samples after dilution.

Amy

****
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****

-----Original Message-----
From: Denton, Debra
Sent: Saturday, May 23, 2015 8:54 AM
To: Black, Ned; Stuber, Robyn
Cc: Wagner, Amy
Subject: RE: RE: Information on toxicity testing

Hi Ned

Yes, any of the larval development (abalone, urchins) or the urchin fertilization tests would be good tests to be conducted. Yes, the urchin fertilization is a shorter time endpoint, but you still have the time involved to set up and make the endpoint observations. It is still paramount to conduct tests with longer biological endpoints. I am thinking we should consider another indicator species that would be sensitive to petroleum contaminants too. I would like to hear from Amy on this point. Even, if we conduct a longer test duration test like the fish 7 day survival and growth, it still would be important to evaluate whether there are adverse effect to fish in the system. We can measure lethality on a daily basis and observe for behavior visual effects (not official endpoints) of the test but with this type of acute spill, it would be important to make those observations. The community of people will be interested in fish observed effects.

Are you looking to collect samples this weekend and start the test next week bc of the spill? You may wish to consider collecting additional water - if any TIE manipulations would be considered or chemical analysis would be considered.

Let me know if you need anything else.

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-----Original Message-----
From: Black, Ned
Sent: Friday, May 22, 2015 2:35 PM
To: Denton, Debra; Stuber, Robyn
Subject: FW: RE: Information on toxicity testing

Howdy Debra and Robyn,

I've been working with the Emergency Response folks on the Refugio Beach oil spill response and was asked for monitoring suggestions. Since I know Amy Wagner out at the R9 Lab does a lot of purple sea urchin and red abalone bioassays, and those critters are native to the California coast, I suggested we might get water samples offshore from the beach. This came up in a briefing for Alexis Strauss this morning and she asked me to run the idea past the two of you.

Attached are the SOPs Amy wrote for these bioassays. If and when we do this, either one of our contractors or maybe I will collect the water as described in the SOPs and transport it immediately to the lab while holding the temperature at 4 C. Amy or Peter Husby will then run the bioassays within the 36 hour hold time. My intention for the data is to both document and map impacts and to see if this protocol could be used in the future to help guide response efforts. I'm particularly interested in the urchin assay because the results come quickly.

Let me know if you have any thoughts or would like to be further involved. At this point, the effort down at Refugio is too focused on immediate response to divert a boat for this sampling, but that will change in a couple days. Regardless, I'm not thinking we could use the data to guide this response so much as I'd like to evaluate this sort of sampling and analysis for future responses.

Cheers,

ned

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Please be advised I currently have limited access to email when I am not in the office (e.g., on travel), therefore please be patient with any communication delays.

-----Original Message-----
From: Husby, Peter

Sent: Wednesday, May 20, 2015 4:01 PM
To: Black, Ned; Wagner, Amy
Subject: RE: RE: Information on toxicity testing

Ned,

Here are the two SOPs. Section 5 is on Sample handling & preservation. We will need more than 40 mL samples to test at ambient levels. The urchin test uses about 30 mL per concentration (6 reps of 5 mL each). Assuming this is seawater, we would want at least 4 VOA vials per sample (or a larger amber glass bottle)(assuming a 0.5 dilution factor and testing 100% and down). For the abalone, we would need a couple of liters, assuming (5 reps of 200mL each) and a similar dilution series. I would use 1 liter amber glass for those. If the water is not 32-36 ppt seawater, we will have to salt up the samples, which we can do but it is a pain. If the samples are at all fresh we should use a different species.

Peter
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-----Original Message-----
From: Black, Ned
Sent: Wednesday, May 20, 2015 3:41 PM
To: Husby, Peter; Wagner, Amy
Subject: FYI: RE: Information on toxicity testing from Deepwater

Yo dude,

Can you send the SOPs for urchins and abalone tests. Particularly anything on sample collection and holding.

Thnx,

ned

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-----Original Message-----
From: Allen, HarryL
Sent: Wednesday, May 20, 2015 3:38 PM
To: Black, Ned
Cc: Moxley, Bret; Waldon, MARGARET; Guria, Peter; Stroud, Fred
Subject: Re: Information on toxicity testing from Deepwater

This is a GREAT suggestion. Thanks Ned.

Also, on the inland piece/inland wash to the culvert, Maggie Waldon is heading out there now and should be able to debrief you around 4 if you like. She said you could call her. 415-940-1109.

Thanks again!

Sent from my iPhone

> On May 20, 2015, at 2:08 PM, "Black, Ned" <Black.Ned@epa.gov> wrote:
>
> Harry et al.,
>
> This is just a thought. If you want to screen seawater samples for toxicity, the R9 lab regularly runs tox tests on purple sea urchins and red abalone. Both critters are native to the California coast; I think that one criticism of the rotifer work during Deepwater was the use of non-native species. I checked with Peter Husby at the lab and they have a good stock of urchins and could conceivably start running samples in short order. They have a limited supply of abalone but would order more if necessary. If you want more info on these tests I'll get the SOPs from Peter.
>
> I've opened up the two NOAA data sites which came out of Deepwater and will start looking for sampling strategies. My guess is the NOAA folks (probably Jordan Stout) are ahead of us on that.
>
> ned
>
> ned black, ph.d.
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>
> Please be advised I currently have limited access to email when I am not in the office (e.g., on travel), therefore please be patient with any communication delays.
>
> -----Original Message-----
> From: Allen, HarryL
> Sent: Wednesday, May 20, 2015 10:36 AM
> To: Black, Ned; Moxley, Bret; Waldon, MARGARET; Guria, Peter; Stroud, Fred
> Subject: Information on toxicity testing from Deepwater
>
> Hey Ned.
> Now that you'll be here I wonder if you could look into this for us. After Deepwater NOAA created a website as a repository for all the information on tox and environmental data. I wonder if you remember that and now how to access it. If like to put over some of that to inform a nearshore sampling strategy. Objective would be to ascertain PAH and BTEX affects on aquatic life. I understand rotifer tests could be limited. Maybe PAH water/sed analysis or maybe another surrogate method would be worthwhile. To early for this yet but I want to start thinking about it.
>
> Sent from my iPhone